

## PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

Apparatus for Automatically Planing Coal and Loading it  
Onto a Conveyor

I, WILHELM LÖBBE, a German citizen, of Oberaden, Kreis Unna, Westfalia, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to apparatus for automatically planing coal and loading it onto a conveyor of the type in which a coal planer is guided in a channel of a ramp bolted to one side of the conveyor.

According to the present invention there is provided apparatus for automatically planing coal and loading it onto a conveyor including a planing machine adapted to be guided along a channel provided in a ramp secured to one side of the conveyor wherein the inclined plane of the ramp is overlapped by a ploughshare-shaped part of the planing machine. Preferably the channel is provided with vertical walls so that the planer cannot be shifted laterally in a direction at right angles to the longitudinal axis of the conveyor, and the planer is provided with a beam adapted to fit in the channel and guide the planer.

A flexible member may be provided to haul the planer in either direction along the conveyor and this member is preferably returned underneath the inclined surface of the ramp.

In order to prevent the coal from being dammed up in front of a vertical wall of the guide channel, which is liable to happen when the coal is pushed upwards, the ramp is designed in such a manner that the inclination of the surface of the ramp lying below the channel is less than that of the surface above the channel and the lower part of the upper inclined surface does not lie in the same plane as the lower surface. This design allows the coal to slide under the action of the ploughshare shaped part upwards across the ramp and over the lateral sectional

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iron forming the side of the conveyor into the conveyor without choking up the guide channel, in spite of the fact that the channel is more or less filled immediately in front of the ploughshare shaped part of the planing machine by the guide beam across which the coal pieces are forced.

There is no need for the ramp and likewise the ploughshare-shaped part of the coal planer to extend as far as the upper edge of the lateral sectional iron, and the ramp may be provided with a horizontal landing situated below the level of the upper edge of the conveyor. The upper inclined surface of the ramp is preferably so inclined that its plane does not intersect the conveyor itself. This is to make certain that the coal does not clog before the upper part of the conveyor but rolls over the side edge into the conveyor. The planer travels at such a speed that considerable quantities of coal are cut from the face and this coal is forced up the ramp as a coherent flow in much the same manner as when soil flows from a ploughshare. Small quantities of coal do not pass into the conveyor but return to the floor of the working. However, this coal is picked up again when the planer next returns along the seam. The advantage of not having the upper part of the ramp extending to the upper edge of the side of the conveyor is that it is then possible to utilise the upper edge of the side of the conveyor to guide other apparatus such as a coal cutter, as described and claimed in Application No. 14272/48 (Serial No. 650,496).

In order to avoid the guide beam being wedged in the guide channel the cross section of the beam is smaller than the cross section of the guide beam. In addition to this the guide beam tapers towards its ends. Consequently, under the stress of cutting, the planer is inclined with respect to the coal face, and there is, furthermore, no friction between the flank

of the planer lying behind the cutting tool and the coal face.

An embodiment of the invention is shown by way of example in the accompanying drawing.

Fig. 1 is a cross section of the conveyor and a front view of the planing machine.

Fig. 2 is a corresponding view from above.

10 Referring to the drawings the conveyor trough is all that is shown of the conveyor A. The conveyor trough 13 is above the bottom 12 between the two side sectional irons 10 and 11. The coal entering the  
15 conveyor trough is moved along therein by means of a scraper flight conveyor consisting of two chains and scrapers arranged at certain distances between the chains. The scraper flight conveyor is  
20 returned underneath the bottom 12, the laterally arranged chains during this portion of their travel being supported by the inwardly turned wings of the side sectional irons.

25 A ramp C is bolted to one side of the conveyor A. At about half of the height of the ramp there is provided an uncovered channel 14 in which the longitudinal guide beam 15 of the planing  
30 machine B is guided. The ramp is so designed that the two inclined surfaces 16 and 17 thereof do not lie in one and the same plane; the surface 17 above the  
35 channel 14 being at a greater angle to a plane through the base of the ramp than the surface 16 lying below the channel. The ramp has a horizontal landing 18 somewhat below the upper edge of the side sectional iron 10 of the conveyor trough.  
40 The plane containing the surface 17 does not intersect the sectional iron 10 of the trough as is illustrated by a dotted line 19. In consequence of this design there are no structural parts above the  
45 conveyor so that the upper part of the conveyor can be used for guiding a coal cutter which can travel and return along the whole length of the conveyor.

The planer is provided with two cutting tools 20 and 21. A ploughshare shaped part 22 is adjacent to each cutting tool. The ploughshare shaped part 22 overlaps the inclined ramp C; the planer B is guided by means of the beam  
50 15 arranged in the channel 14 of the ramp C. The channel 14 is provided with vertical walls so that by making the beam 15 a fairly close fit in the channel the possibility of the planer being shifted  
60 laterally in a direction at right angles to the longitudinal axis of the conveyor is reduced. The ploughshare shaped blades 22, by means of which the coal detached from the coal face by either cutting tools  
65 20 and 21 is pushed across the ramp into

the conveyor trough, reach as far as the beginning of the horizontal landing, that is nearly as far as the upper edge of the side of the conveyor.

The guide beam 15 provided for the  
70 coal planer B fills the channel 14 more or less completely at that part of the ramp over which the coal is pushed upwards of the ramp C. On the other hand the guide  
75 beam 15 tapers uniformly from the planer B to both its ends 24 to which the endless hauling member 25 is attached. As the guide beam tapers to its ends the coal planer is brought by the stress of cutting  
80 into an inclined position with respect to the coal face 23, so that the cutting tool 21 which is not cutting is removed away from the coal face 23; so that unnecessary friction is thereby avoided. In addition,  
85 in consequence of this inclined position the cutting angle of the tool 20 becomes more favourable. The endless hauling member 25 for the coal planer B is likewise arranged in the channel 14.

The hauling member 25 is preferably  
90 returned underneath the ramp C.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I  
95 claim is:—

1. Apparatus for automatically planing coal and loading it onto a conveyor including a planing machine adapted to be  
100 guided along a channel provided in a ramp secured to one side of the conveyor wherein the inclined plane of the ramp is overlapped by a ploughshare-shaped part of the planing machine.

2. Apparatus according to claim 1  
105 wherein the channel is provided with vertical walls so that the planer cannot be shifted laterally in a direction at right angles to the longitudinal axis of the conveyor.

3. Apparatus according to claim 2  
110 wherein the planer is provided with a beam adapted to fit in said channel to guide the planer.

4. Apparatus according to any of  
115 claims 1 to 3 wherein a flexible member is provided and is adapted to haul the planer in either direction along the conveyor and wherein said member is returned underneath the inclined surface  
120 of the ramp.

5. Apparatus according to any of the preceding claims wherein the inclination of the surface of the ramp lying below the channel is less than that of the surface  
125 above the channel and wherein the lower part of the upper inclined surface does not lie in the same plane as the lower inclined surface.

6. Apparatus according to any of the  
130

preceding claims wherein the ramp has a horizontal landing situated below the level of the upper edge of the conveyor.

5 7. Apparatus according to claim 5 and claim 6 wherein the inclination of the upper inclined surface is such that its plane does not intersect the conveyor.

10 8. Apparatus according to any of claims 3 to 7 wherein the guide beam extends on both sides of the planer and tapers towards its ends so that, under the stress of cutting, the planer is inclined with respect to the coal face.

9. Apparatus for automatically planing coal and loading it onto a conveyor 15 substantially as herein described with reference to the accompanying drawing.

Dated this 26th day of May, 1948.

Agents for the Applicant,  
STANLEY, POPPLEWELL &  
FRANCIS,

Chartered Patent Agents,  
88—90, Chancery Lane, London, W.C.2.

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[This Drawing is a reproduction of the Original on a reduced scale.]

